

# Rationale for Mandated Influenza Vaccination for Healthcare Personnel

## Health Officer Order dated October 2, 2013

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As Health Officer for Los Angeles County, Dr. Jonathan E. Fielding is issuing a Health Officer Order mandating that all general acute care hospitals, intermediate care facilities, and skilled nursing facilities in Los Angeles County require their healthcare personnel (HCPs) who work in patient care areas, to receive an annual influenza vaccination during the influenza season.

## Supporting Rationale

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Flu in the workplace can lead to increased absences, lower productivity, and higher medical costs. In addition, nosocomial transmission from healthcare personnel to patients has been documented in a variety of acute care settings including neonatal intensive care units, pediatric and general medical wards, transplant units, oncology units, and emergency departments.<sup>1</sup>

Influenza vaccination is effective in reducing influenza, and mandatory vaccination programs in healthcare settings have demonstrated increased influenza vaccination rates. Thus, mandatory vaccination policies in health care facilities can lead to decreased illness among personnel, decreased staff absenteeism, and would logically lead to decreased morbidity and mortality among patients.

### Truths about Influenza in Healthcare Settings

Unvaccinated personnel can transmit the flu to other personnel, which can lead to decreased productivity and increased absenteeism. Healthcare personnel can also transmit influenza to patients.

- Studies suggest that up to 25% of healthcare personnel are infected with influenza each season.<sup>2, 3</sup>
- Healthcare personnel may be more likely to work when ill than other professions, which increases the risk for flu transmission in healthcare facilities.
- As many as 1 in 2 infected people never show classic flu symptoms,<sup>4</sup> but can shed virus for 5-10 days. Thus, asymptomatic personnel can spread influenza unknowingly.
- Patient admissions and healthcare personnel absenteeism are typically higher during the flu season, which increases the impact of flu-related absenteeism on operations of these health care facilities.
- Influenza infection that is acquired during a hospital stay (nosocomial) leads to increased hospital days and mortality for inpatients<sup>5</sup> and the CDC notes that higher staff vaccination levels have been associated with a lower risk of nosocomial flu cases and mortality.<sup>6</sup>

### Impact of Influenza Vaccination on Infection, Illness and Absenteeism

When well matched to the circulating flu strains, Inactivated Influenza Vaccine (flu shot) and Live Attenuated Influenza Vaccine (nasal spray) are effective in preventing illness and may lead to reductions in provider visits, complications, hospitalizations, and absenteeism in healthy adults under 65 years of age. Reduced absenteeism during the flu season is especially beneficial for hospitals, when bed-days and staff illness tend to be high.

- Two randomized control studies have shown reductions in influenza illness. In a season when the flu vaccine was well matched to circulating strains, influenza vaccination was found to be 88% effective in preventing influenza type A infection and 89% effective in preventing influenza type B infection in healthcare personnel.<sup>7</sup> In the second study, healthy working adults who were vaccinated against flu

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were found to have 34% fewer incidents of influenza-like illness (ILI), 42% fewer doctor visits, and 32% fewer sick days.<sup>8</sup>

- Results of research focused on absenteeism vary but several studies suggest that vaccination of healthcare personnel can reduce work absences.

A randomized, placebo-controlled double-blind study of the impact of vaccination on absenteeism in a children's hospital found that influenza vaccination reduced absenteeism related to respiratory infections by 28%.<sup>9</sup> In another randomized double-blind controlled trial conducted over 3 consecutive years, vaccinated personnel had 29% fewer cumulative days of febrile respiratory illness and 53% fewer cumulative days of work absence than those in the control group. While the results were in the expected direction, neither difference was statistically significant. The authors note that the impact of vaccination on absenteeism may have been moderated by the fact that healthcare personnel may work when ill. Of note, no absences related to adverse vaccination events were reported among study subjects.<sup>7</sup>

### Impact of Influenza Vaccination in Healthcare Settings Relative to Patient Protection

- Several research studies suggest that vaccinating healthcare personnel can reduce patient morbidity and mortality. On average, HCP vaccination rates range between 65-70%. By increasing vaccination rates substantially, amongst HCPs, patient morbidity and mortality is likely to decrease.

#### Long-term Care Facilities

Despite the fact that a recent (2010) Cochrane review raised methodological questions regarding several studies which demonstrate the impact of HCP vaccination on patient health, there is substantial evidence from other studies which demonstrate that vaccination in healthcare settings does decrease influenza transmission from HCPs to patients, particularly in long-term care settings.<sup>10</sup>

Studies in long-term care settings have shown that staff vaccination against influenza has been associated with reductions in all-cause mortality among patients,<sup>2,3</sup> influenza-like illness (ILI),<sup>11</sup> and hospitalizations with ILI.<sup>10</sup> In addition, one long-term care study suggested that although staff vaccination rates did not independently predict ILI outbreaks, high rates of vaccination among *both* staff and residents can substantially reduce the rate and impact of influenza outbreaks.<sup>12</sup>

#### Acute Care Facilities

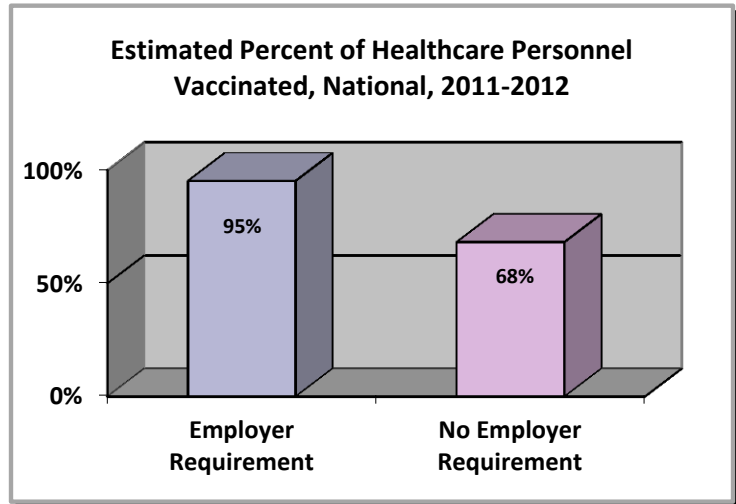
Three published studies suggest a potential positive impact of healthcare personnel vaccination on patient outcomes in acute care settings. A study conducted in a tertiary care academic hospital in the United States suggested that there is a significant inverse association between healthcare personnel vaccination rates and the rate of nosocomial influenza among patients, suggesting that increasing rates may lower nosocomial infections.<sup>13</sup> A modeling study suggested that the relative effect of healthcare personnel vaccination is lower in hospitals than nursing homes, but that the absolute number of infections that can be prevented in the hospital is higher, because of higher hazard rates.<sup>14</sup> Further, a pragmatic cluster randomized controlled trial conducted recently in the Netherlands demonstrated that the intervention hospitals, where influenza vaccination was higher, showed approximately half the rate of nosocomial influenza and/or pneumonia infection in hospital inpatients.<sup>15</sup>

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### Impact of Mandatory Vaccination Policies on Vaccination Rates

Flu vaccination rates among healthcare personnel are suboptimal, which leaves workers and patients, at higher risk for illness, complications and death. Mandatory vaccination seems to offer the best opportunity to significantly increase vaccination coverage among healthcare personnel.

- Seasonal flu vaccination rates among healthcare personnel fall short of the Healthy People 2020 standard of 90%.<sup>16</sup> Nationally, during the 2011-2012 flu season, an estimated 67% of healthcare personnel were vaccinated against influenza. Vaccination coverage was highest among hospital-based healthcare personnel (76.9%), but approximately 1 in 4 hospital personnel remained unvaccinated.<sup>17</sup>
- Mandatory vaccination policies instituted at acute care hospitals have been proven to increase immunization rates among healthcare personnel. At the national level, coverage for healthcare personnel working in hospitals that required influenza vaccination in the 2011-2012 flu season was 95.2%, compared to 68.2% for personnel working in hospitals that did not require vaccination.<sup>17</sup>
- In a review of hospital policies and state laws regarding healthcare personnel vaccination, increased healthcare personnel vaccination rates were significantly associated with mandated vaccination policies that included: termination or other repercussions for non-compliance, including masking or reassignment. State laws, like California's, which require hospitals to offer vaccine to employees at no cost, educate employees, and/or require staff to be vaccinated or sign a declination, were not associated with higher vaccination rates among personnel.<sup>18</sup>
- At this time, there is insufficient evidence on whether masking asymptomatic personnel reduces flu transmission, but anecdotal reports suggest that requiring masking for unvaccinated staff can increase compliance with mandatory vaccination policies. This was reported by researchers in Germany, where flu vaccination rates for healthcare personnel increased from 33% to 52% in the 10 days following implementation of a masking requirement for unvaccinated personnel.<sup>19</sup> In the U.S., an author of a five-year study at University of California Irvine Medical Center suggested that the masking requirement included in their mandatory vaccination program may have "provided sufficient disincentive to encourage healthcare providers to prioritize vaccination."<sup>20</sup>
- Mandatory vaccination policies have been instituted by hospitals, the Department of Defense, and municipalities. In addition, a California law, Cal-OSHA, and The Joint Commission require facilities to offer influenza vaccinations at no charge to personnel, as part of the facilities' infection control programs.



### Questions?

Contact the Los Angeles County Department of Public Health, Immunization Program at (213) 351-7800 and [IP@PH.LACOUNTY.GOV](mailto:IP@PH.LACOUNTY.GOV) or visit [www.publichealth.lacounty.gov/ip](http://www.publichealth.lacounty.gov/ip).

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### References

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- <sup>1</sup> Talbot T, Bradley S, Cosgrove S, et al. SHEA Position Paper: Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages, 2005. Available at [http://www.shea-online.org/Assets/files/HCW\\_Flu\\_Position\\_Paper\\_FINAL\\_9-28.pdf](http://www.shea-online.org/Assets/files/HCW_Flu_Position_Paper_FINAL_9-28.pdf). Accessed August 28, 2013.
- <sup>2</sup> Carman WF, Elder AG, Wallace LA, et al. (2000) Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial. *Lancet*, 8,355(9198):93-7.
- <sup>3</sup> Potter J, Stott DJ, Roberts MA, et al. (1997) Influenza vaccination of health care workers in long-term-care hospitals reduces the mortality of elderly patients. *J Infect Dis.*,175(1):1-6.
- <sup>4</sup> Stott DJ, Kerr G, Carman WF. (2002) Nosocomial transmission of influenza. *Occup Med (Lond)*, 52(5):249-53.
- <sup>5</sup> Van Voris LP, Belshe RG, Shaffer JL. (1982) Nosocomial influenza B virus infection in the elderly. *Ann Intern Med*, 96:153-158.
- <sup>6</sup> CDC. Influenza Vaccination Information for Health Care Workers. Available at <http://www.cdc.gov/flu/healthcareworkers.htm>. Accessed August 29, 2013.
- <sup>7</sup> Wilde JA, McMillan JA, Serwint J, et al. (1999) Effectiveness of influenza vaccine in health care professionals: a randomized trial. *JAMA*, 281:908-13.
- <sup>8</sup> Bridges CB, Thompson WW, Meltzer MI, et al. (2000) Effectiveness and cost-benefit of influenza vaccination of healthy working adults: A randomized controlled trial. *JAMA*, 284:1655-63.
- <sup>9</sup> Saxen H, and Virtanen M. (1999) Randomized, placebo-controlled double blind study on the efficacy of influenza immunization on absenteeism of health care workers. *Pediatr Infect Dis J*, 18:779-83.
- <sup>10</sup> Thomas RE, Jeffrson T, and Lasserson TJ. (2010) Influenza vaccination for healthcare workers who work with the elderly. *Cochrane Database Syst Rev*
- <sup>11</sup> Hayward A, Harling R, Wetten S et al. (2006) Effectiveness of an Influenza Vaccine Programme for Care Home Staff to Prevent Death, Morbidity, and Health Service Use among Residents; Cluster Randomised Controlled Trial. *BMJ*,333:1241.
- <sup>12</sup> Shugarman L, Hales C, Setodji C et al. (2006) The Influence of Staff and Resident Immunization Rates on Influenza-like Illness Outbreaks in Nursing Homes. *Journal of the American Medical Directors Association*, 7(9); 562-567.
- <sup>13</sup> Salgado CD, Giannetta ET, Hayden FG, et al. (2004) Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. *Infect Control Hosp Epidemiol*, 25:923-8
- <sup>14</sup> van den Dool C, Bonten MJ, Hak E, et al. (2009) Modeling the effects of influenza vaccination of health care workers in hospital departments. *Vaccine*, 27(44):6261-7.
- <sup>15</sup> Riphagen-Dalhuisen J, Burgerhof JG, Frijstein G, et al. Hospital-based cluster randomised controlled trial to assess effects of a multi-faceted programme on influenza vaccine coverage among hospital healthcare workers and nosocomial influenza in the Netherlands, 2009 to 2011. *Euro Surveill*. 2013;18(26) Available at <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20512> Accessed September 4, 2013.

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<sup>16</sup> U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. Healthy People 2010. Washington DC. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=23>. Accessed August 28, 2013.

<sup>17</sup> CDC. Influenza Vaccination Coverage Among Healthcare Personnel- 2011-12 Influenza Season- United States. MMWR. September 28, 2012 / 61(38);753-757.

<sup>18</sup> Zimmerman RK, Lin CK, Raymund M, et al. (2013) Hospital Policies, State Laws, and Healthcare Worker Influenza Vaccination Rates. *Infect Control Hosp Epidemiol.*,34(8):854-7.

<sup>19</sup> Wicker S. (2009) Unvaccinated health care workers must wear masks during flu season—a possibility to improve influenza vaccination rates? *Vaccine*, 27(20):2631–2632.

<sup>20</sup> Quan K, Tehrani D, Dickey L, et al. (2012) Voluntary to Mandatory: Evolution of Strategies and Attitudes toward Influenza Vaccination of Healthcare Personnel. *Infect Control Hosp Epidemiol.*, 33(1):63-7